

Maine Public Schools

ENERGY USAGE REPORT AND ANALYSIS



A REPORT FROM THE DEPARTMENT OF EDUCATION
USING DATA COLLECTED AND ORGANIZED BY THE
UNIVERSITY OF SOUTHERN MAINE AND ANALYSED
BY HARRIMAN ASSOCIATES

MARCH 11, 2009



Contributors

Clifton Greim, PE, President

Harriman Associates
Auburn, Maine

Steven P. Furgeson, PE, CHFM, LEED^{AP}

Harriman Associates
Auburn, Maine

David Silvernail

Center for Education Policy, Applied
Research, and Evaluation
University of Southern Maine

James Sloan

Center for Education Policy, Applied
Research, and Evaluation
University of Southern Maine

Paul Caron

Director of Facilities and Projects
Lewiston Public Schools

James Rier

Director of Finance and Operations
Maine Department of Education

Scott E. Brown, AIA, LEED^{AP}

Director of School Facilities
Maine Department of Education

Dale Doughty, Consultant

Division of School Facilities
Maine Department of Education

Paul Johnson, Consultant

Division of School Facilities
Maine Department of Education

Ann Pinnette, Education Specialist

Division of School Facilities
Maine Department of Education

This report is available online at:

<http://www.maine.gov/education/const/homepage.htm>

Table of Contents

	<u>PAGE</u>
REPORT OVERVIEW	1
Background.....	1
Analysis and Engineering Review.....	2
Summary.....	4
 CURRENT ENERGY PERFORMANCE AND BUILDING COMPONENT COSTS – PHASE I	 5
 CURRENT ENERGY PERFORMANCE AND BUILDING COMPONENT COSTS – PHASE II.....	 6
 ENERGY SURVEY RESULTS – TABLE / GRAPHS.....	 7
Figure 1: Building Original Construction Date	8
Figure 2: Age of Roof.....	8
Figure 3: Age of Windows	9
Figure 4: Age of Primary Boiler.....	9
Figure 5: Heating Fuel Usage by Percentage of Total Cost (2007-08)	10
Figure 6: Buildings With and Without Energy Audits	10
 ENERGY SURVEY PRELIMINARY RESULTS	
Prepared by Dr. David Silvernail and Jim Sloan, University of Southern Maine	

Report Overview

Background

During the late summer of 2008, the Department of Education became very concerned over the high cost of energy especially heating oil and diesel and whether school budgets that had been established in the spring would be able to sustain the high energy prices. Members of the Department of Education's School Facilities Division met with engineers from Harriman Associates and a school facilities director from a large school unit to formulate a questionnaire for public schools in Maine. The questionnaire was designed to collect information on a number of energy-related topics. The questionnaire sought to find out how much energy individual units used and how much was budgeted for in the coming year, whether sufficient funds were allocated for energy, and whether school units purchased energy through long-term contracts. The questionnaire also asked for information on the school buildings. The questions asked for size of building, type of heating unit, age of building and any additions, recent weatherization including roof replacement, window replacement boiler replacement, and energy audits. The questionnaire also asked for electrical usage and ventilation systems in the building. Information on fuels used for transportation was also requested.

Dr. David Silvernail through the University of Southern Maine, formatted, distributed, and collected the electronic questionnaires. Information was submitted by 118 school units and documented energy information for 56% of the school buildings statewide. The University tabulated the results into the "Energy Survey Preliminary Results" report (attached).

The information reported by the local school units was complete, and the quality of the reports was above expectations. In dealing with both the costs of energy and the repair and replacement of facility components, the engineers took a conservative approach.

Report Overview

Analysis and Engineering Review

The Department of Education organized the data by category and then arranged meetings with the same team including the engineers who assisted in the development of the questionnaire. The group concentrated on building types and building systems and their consumption of energy. The engineers were asked to formulate what steps could be taken to gain major savings in energy consumption and what would be the payback period.

The payback calculation is used as an indicator of the potential payback for the amount invested. The data is used in a general fashion to indicate scope of savings and scope of cost. The payback calculation should not be used as a precise measure of reward to investment.

The information passed on to the engineers came from 118 school units and represented 56% of the school units in Maine. The group felt that the sample was large enough to make a projection on the assumption that the sample was truly representative of all school buildings in the State. Non-education buildings such as bus garages, superintendent offices, central offices, and other non-education facilities were removed from the data before analysis was completed as a method of making the results refined more specifically to educational buildings.

The study concentrated on how much excess electrical energy costs and how much excess heating costs were being incurred above the average because of building inefficiencies. The study also identified boilers, windows, and roofs that were beyond the 20-year life expectancy.

Attached to this Report are the results of the survey, information relating to the respondents, and some graphics that may be helpful in understanding the survey. Also attached are the Phase I and Phase II worksheets with information that was extrapolated by the engineers from the survey completed by school units. In the Phase I analysis an oil cost predictor of \$2.25 per gallon for heating oil was used which was the actual fuel oil cost reported in the survey for FY 2007-2008. In the Phase II computation an oil cost predictor of \$3.34 per gallon was used which was the actual budgeted fuel cost for the FY 2008-2009 school year.

The Phase I analysis performed several simple calculations on the data to understand the condition and possible improvements to the school buildings. The Phase II analysis performed a more complex analysis on the ventilation systems in the buildings to understand potential condition and improvements.

Report Overview

Analysis and Engineering Review (cont'd)

In both the Phase I and Phase II analysis the actual energy consumption per square foot was calculated for each building. This was compared to a code compliant school building that met the Benchmark standard used by the State of Maine for school buildings. The potential energy savings was calculated based on the difference between these two values. Some school buildings showed that they consumed less energy than the Benchmark standard. Others showed that they consumed more energy than the Benchmark standard. These different performances were tallied and then used in the overall potential energy savings potential.

Approximately 88% of the energy purchased to heat school buildings is #2 fuel oil. A little greater than 6% of the energy to heat school buildings is natural gas. However the reporting data on natural gas was incomplete and could not be used. Consequently a #2 fuel basis was used in computing energy costs and savings in this analysis. There is some inaccuracy in this as 9% of school heating energy is purchased in the form of natural gas, propane, or other fuels. However as such a large percentage of energy is fuel oil and this is the least costly fuel currently, it was considered as a conservative basis for this analysis.

The boilers in the school building were analyzed in Phase 1 for potential savings and upgrade costs. It was assumed that boilers that were in operation greater than 20 years were likely not operating as efficiently as newer boiler systems. A cost of \$1.90 per square foot was assigned as a reasonable allowance for upgrading the boiler equipment or recommissioning the existing boiler equipment and installing new controls for the boiler room. Operating savings were predicted based on a past and present fuel cost per gallon.

The roof and windows were also analyzed in Phase 1. It was assumed that roofs and windows that were installed longer than 20 years ago are not likely performing as efficiently as newer envelope systems. Costs of \$58/sq ft of glass area and \$19/sq ft of roof area were used as reasonable allowances for replacing window and roof systems. The survey data did not include area of glass in a building. Consequently it was assumed that 15% of the floor area represented a reasonable but still conservative estimation of actual window area. In addition the data did not include information on actual roof area. It was decided that 60% of the floor area represented a reasonable but still conservative estimation of actual roof area. In addition it should be noted that this roofing replacement cost includes roof decking, R-30 insulation, and roofing membrane. It does not include costs for structural upgrades if these are necessary at the building. The operating savings were predicted based on a past and future fuel cost per gallon.

Report Overview

Analysis and Engineering Review (cont'd)

It was generally felt that the assumptions in the Phase 1 analysis were conservative. It is likely that the costs experienced in the upgrading of these systems would be less than those used above.

Phase II analysis included an estimation of the potential savings and investment involved in ventilation in the buildings. This analysis assumes that ventilation systems greater than 25 years are likely not operating as efficiently as new code compliant systems. Installation of new heat recovery devices or newer air handling units could bring ventilation systems in line with the Benchmark standards. The information recorded in the survey includes the different types of ventilation systems in the buildings as well as the age of the buildings. An allowance of \$8/sq ft was used as a reasonable cost in replacing systems to bring them into compliance with existing Benchmark standards.

Experience has shown that aging ventilation systems are often rendered inoperable to prevent freeze-ups and inconsistent operation. It is likely that many of the systems included in this report actually are not admitting ventilation air and that actual energy consumption is reduced by this action. However this analysis has assumed that the ventilation systems are performing adequately. This assumption enables an “apples to apples” comparison in terms of energy currently consumed vs. the Benchmark standard. It is likely, however, that buildings are not being adequately ventilated and that the existing energy consumption is artificially lowered by this status. If the ventilation systems were currently operating properly the current energy consumption would increase and the predicted savings as a result of any modifications would be greater. Furthermore the cost for installing a new ventilation system is likely conservative. Through proper engineering it is likely that new ventilation systems could be installed or modified to achieve the energy savings budget without the full invested costs.

Summary

The report shows that public schools are expending between \$27,482,516 (Phase I) and \$37,373,466 (Phase II) at this year's budgeted cost of oil (\$3.34/gal) beyond what they would spend if the schools were renovated to BenchMark Standard. In order to reach the BenchMark Standard renovations costing \$296,223,226 (Phase I) to \$540,630,862 (Phase II) would need to be made.

Page 10 of the Report shows two additional important elements. At present 88% of Maine schools are heated with oil. Also, only 6% of Maine schools have had an energy audit including a thermal scan, and 62% of Maine schools have had no energy audit at all.

Current Energy Performance and Building Component Costs – Phase I*

Current Energy Performance				Building Component Costs		
System	Excess Annual Energy (Therms)	Cost (\$\$/Therm)	Excess Annual Cost (\$\$)	Building Component	Bldg Area w/ >20yr aged component (sq ft)	Replacement Cost (\$\$)
Electrical Lighting and Plug Loads	333,080	\$5.14	\$1,710,439	Boilers	5,563,920	\$10,571,448
Heating (FY 07-08 Actual Fuel Oil Cost Ave - \$2.25/gal)	4,538,225	\$2.03	\$9,203,951	Windows	9,564,048	\$83,207,221
			Total based on actual survey results – 56% of schools ==>	Roofs	3,795,070	\$72,106,338
			\$10,914,390	Total based on actual survey results – 56% of schools ==>		
			Projected total based on all public schools ==>	\$165,885,007		
			\$19,489,982	Projected total based on all public schools==>		
				\$296,223,226		
			Simple Payback based on actual survey results – 56% of schools ==>	15.2 yrs		
			Simple Payback based on all public schools ==>	15.2 yrs		

Current Energy Performance				Building Component Costs		
System	Excess Annual Energy (Therms)	Cost (\$\$/Therm)	Excess Annual Cost (\$\$)	Building Component	Bldg Area w/ >20yr aged component (sq ft)	Replacement Cost (\$\$)
Electrical Lighting and Plug Loads	333,080	\$5.14	\$1,710,439	Boilers	5,563,920	\$10,571,448
Heating (FY 08-09 Budgeted Fuel Oil Cost Ave - \$3.34/gal)	4,538,225	\$3.01	\$13,680,209	Windows	9,564,048	\$83,207,221
			Total based on actual survey results – 56% of schools==>	Roofs	3,795,070	\$72,106,338
			\$15,390,648	Total based on actual survey results – 56% of schools ==>		
			Projected total based on all public schools ==>	\$165,885,007		
			\$27,482,516	Projected total based on all public schools ==>		
				\$296,223,226		
			Simple Payback based on actual survey results – 56% of schools==>	10.8 yrs		
			Simple Payback based on all public schools==>	10.8 yrs		

*Phase I does not include the cost of upgrades to mechanical ventilation systems and controls.

Current Energy Performance and Building Component Costs – Phase II*

Current Energy Performance				Building Component Costs		
System	Excess Annual Energy (Therms)	Cost (\$\$/Therm)	Excess Annual Cost (\$\$)	Building Component	Bldg Area w/ >20yr aged component (sq ft)	Replacement Cost (\$\$)
Electrical Lighting and Plug Loads	333,080	\$5.14	\$1,710,439	Boilers	5,563,920	\$10,571,448
Heating (FY 07-08 Actual Fuel Oil Cost Ave - \$2.25/gal)	6,375,546	\$2.03	\$12,930,212	Windows	9,564,048	\$83,207,221
<i>Total based on actual survey results – 56% of schools ==></i>			<i>\$14,640,650</i>	Roofs	3,795,070	\$72,106,338
<i>Projected total based on all public schools ==></i>			<i>\$26,144,017</i>	Ventilation/Controls	17,108,534	\$136,868,275
				<i>Total based on actual survey results – 56% of schools ==></i>	<i>\$302,753,283</i>	
				<i>Projected total based on all public schools ==></i>	<i>\$540,630,862</i>	
				<i>Simple Payback based on actual survey results 56% of schools ==></i>	<i>20.7 yrs</i>	
				<i>Projected Payback based on all public schools ==></i>	<i>20.7 yrs</i>	

Current Energy Performance				Building Component Costs		
System	Excess Annual Energy (Therms)	Cost (\$\$/Therm)	Excess Annual Cost (\$\$)	Building Component	Bldg Area w/ >20yr aged component (sq ft)	Replacement Cost (\$\$)
Electrical Lighting and Plug Loads	333,080	\$5.14	\$1,710,439	Boilers	5,563,920	\$10,571,448
Heating (FY 08-09 Budgeted Fuel Oil Cost Ave - \$3.34/gal)	6,375,546	\$3.01	\$19,218,702	Windows	9,564,048	\$83,207,221
<i>Total based on actual survey results – 56% of schools ==></i>			<i>\$20,929,141</i>	Roofs	3,795,070	\$72,106,338
<i>Projected total based on all public schools ==></i>			<i>\$37,373,466</i>	Ventilation/Controls	17,108,534	\$136,868,275
				<i>Total based on actual survey results – 56% of schools ==></i>	<i>\$302,753,283</i>	
				<i>Projected total based on all public schools ==></i>	<i>\$540,630,862</i>	
				<i>Simple Payback based on actual survey results – 56% of schools ==></i>	<i>14.5 yrs</i>	
				<i>Projected Payback based on all public schools ==></i>	<i>14.5 yrs</i>	

*Phase II includes the cost of adding mechanical ventilation and controls.

Energy Survey Results – Table / Graphs

Table 1: Energy Audit Status

Number of School Buildings Reporting	398
Number of School Buildings that have not had an Energy Audit	194
Number of square feet of School Buildings that have not had an Energy Audit	10,294,927

Figure 1: Building Original Construction Date

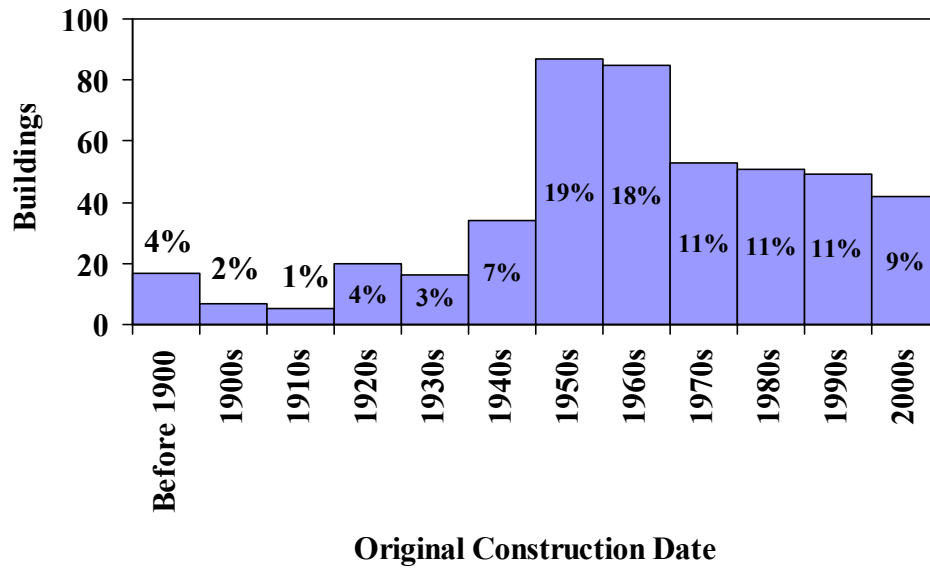


Figure 2: Age of Roof

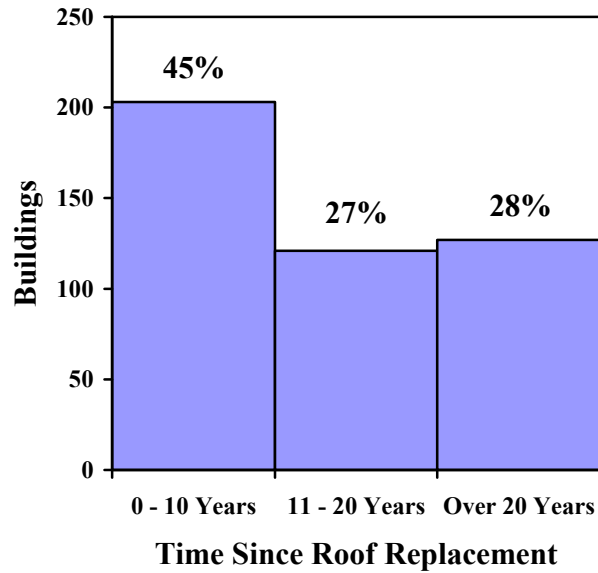


Figure 3: Age of Windows

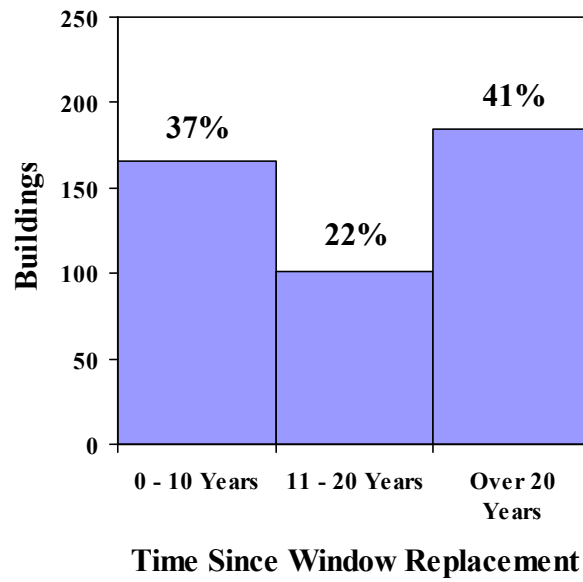


Figure 4: Age of Primary Boiler

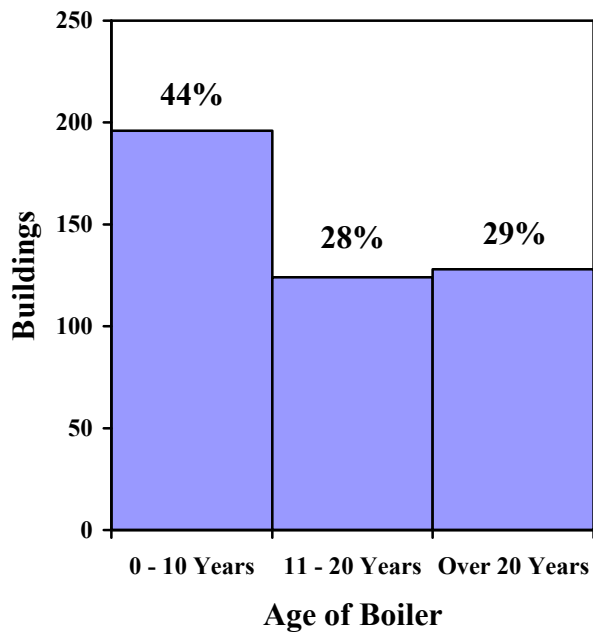


Figure 5: Heating Fuel Usage by Percentage of Total Cost (2007-08)

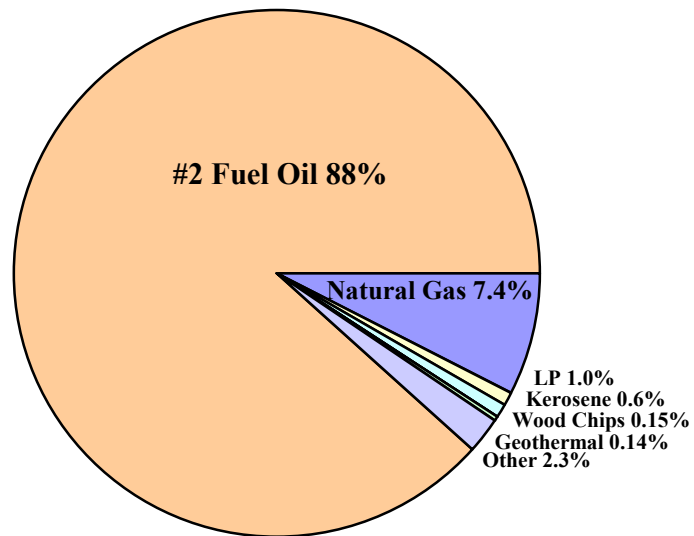
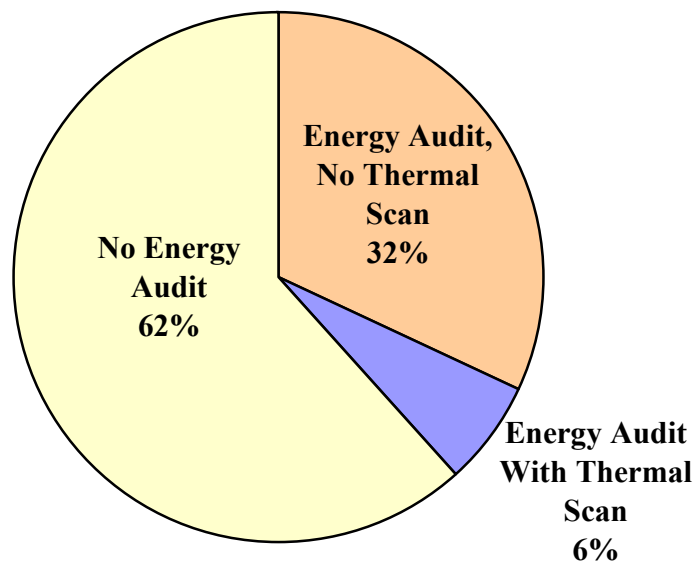


Figure 6: Buildings With and Without Energy Audits



ENERGY SURVEY PRELIMINARY RESULTS

Prepared by:

Dr. David Silvernail

**Center for Education Policy, Applied Research
and Evaluation**

University of Southern Maine

ENERGY SURVEY PRELIMINARY RESULTS

PART 1 GENERAL

1. School Administrative Unit..... Count: 118 SAUs
2. Name of person completing survey
3. Job title of person completing survey SEE JOB TITLE TABLE
4. Contact telephone number

PART 2 DISTRICT-WIDE INFORMATION

A. Budgeting for Pupil Transportation and Maintenance Vehicle Fuel

1. When budgeting for FY 08/09, how many gallons of fuel did you expect to consumer for pupil transportation and maintenance vehicles and at what price per gallon did you budget for?

<i>Fuel Type</i>	<i>Total Quantity (gallons)</i>	<i>Price Per Gallon</i>	<i>Total Price (calc)</i>	<i>Number</i>
Gas	274,759	\$2.93	\$803,982	59
Diesel	2,811,327	\$3.42	\$9,615,201	87
Propane	60,548	\$2.36	\$143,123	10
Other	8,514	\$1.84	\$15,666	1

2. How much did you budget for FY 07/08 pupil transportation and maintenance vehicle fuel costs? \$7,701,959
3. How much did you budget for FY 08/09 pupil transportation and maintenance costs? \$10,526,975
4. Do you anticipate that your FY 08/09 pupil transportation and maintenance vehicle fuel budget will be sufficient to cover FY 08/09 costs?

Yes	No	% Yes
63	41	61%

B. Performance Contracting

1. Is the district currently under contract with an energy performance contractor to improve energy efficiency?

Yes	No	% Yes
28	84	25%

C. Portables

1. Which fuel sources are used in the District's portables, how much of each fuel type was consumed in FY 07/08, and what was the annual cost in FY 07/08?

Fuel Type	Quantity Consumed	Unit	Annual cost (Dollars)	Price Per Gallon (calc)	Number
#2 Fuel Oil	538,652	gallons	\$970,650	\$1.80	10
Kerosene	40,251	gallons	\$82,303	\$2.04	15
LP	96,795	gallons	\$162,312	\$1.68	22

2. When budgeting for FY 08/09, how many units of fuel did you expect to consumer and at what price per unit did you budget for?

Fuel Type	Expected Quantity FY 08/09	Unit	Price per unit	Total Price (calc)	Number
#2 Fuel Oil	1,366,890	gallons	\$3.34	\$4,570,615	21
Kerosene	30,671	gallons	\$3.50	\$107,216	12
LP	91,818	gallons	\$2.39	\$219,870	23

Note: Some SAUs may have reported their entire expected fuel usage here, not portables only.

Do you contract on an annual basis?				If Yes, Fixed Price or Variable Price		
Fuel Type	Yes	No	% Yes	Fixed	Variable	% Fixed
#2 Fuel Oil	20	2	91%	19	4	83%
Kerosene	8	6	57%	6	3	67%
LP	13	10	57%	4	6	68%

Note: For questions 3 through 6, some SAUs seem to have reported their entire electricity usage, not portables only.

3. What was your annual cost for electricity for FY 07/08?.....\$3,642,601

4. If known, what was your kWh usage for FY 07/08? 16,178,018 kWh

5. How much have you budgeted for electricity for FY 08/09?\$3,929,674

6. Do you contract on an annual basis for electricity?

Yes	No	% Yes
22	26	46%

PART 3 BUILDING LEVEL INFORMATION

A. Building Information Count: 485 Buildings

1. Building Name.....

2. Building Address

3. Building Type (Answer Yes to all that apply)

School 393

Lowest grade..... See Gradespan Table

Highest grade

Vocational Secondary School..... 21

Administrative Office..... 69

Bus Garage 28

Alternative Education..... 20

Other 39

Specify:

4. Year of original construction..... See Construction Year Table

Average Age in 2009:..... 44 years

5. Years of Major Additions and

Renovations: See Additions and Renovations Table

Average Type Since Last Addition or Renovation?

17 years

Average Time Since Construction, Latest Addition or Renovation:

22 years

6. Number of floors in building Average: 1.6 See Floors Table

7. Has the building roof been replaced?

Yes	No	% Yes
284	189	60^

8. Year of roof replacement

Average Time Since Roof Replacement:

11 years

Average Time Since Construction or Roof Replacement:

19 years

9. Have the windows been replaced?

Yes	No	% Yes
211	262	45%

10. Year of window replacement

Average Time Since Window Replacement:

10 years

Average Time Since Construction or Window Replacement:

24 years

11. Does this building have air-conditioning?

Yes		No
15% of building area or more	Less than 15% of building area	
49 (10%)	102 (22%)	321 (68%)

Area and Population	Total	Average (if>0)
12. Total Building Area in Square Feet	22,851,794	49,250
13. Total Building Student Population	124,183	268
14. Total Building Staff Population	20,525	44

B. Heating

1. What is the primary heating distribution system for this building? (check all that apply)

	Number	Percent
Hot Water	352	73%
Forced Hot Air	71	15%
Steam	102	21%
Electric	6	1%
Other	24	5% Specify: See Other Dist. Table

Note: Totals more than 100% due to buildings with multiple heating distribution systems.

2. What is the age of the primary boiler(s)?

0 – 10 Years	198	43%
11 – 20 Years	128	28%
Over 20 Years	131	29%
Total	457	100%

3. How is the heating system controlled?

Automatic controls	305	66%
Manual thermostat	154	34%
Total	459	100%

4. Which fuel sources are used in this building, how much of each fuel type was consumed in FY07/08 and what was the annual cost in FY 07/08?

<i>Fuel Type</i>	<i>Quantity</i>	<i>Unit</i>	<i>Annual cost (Dollars)</i>	<i>Unit Cost</i>	<i>Number</i>	<i>Percent Cost</i>
#2 Fuel Oil	7,718,820	gallons	\$17,555,628	\$2.27	424	87%
Kerosene	41,706	gallons	\$118,088	\$2.83	18	1%
LP	149,214	gallons	\$316,346	\$2.12	91	2%
Natural Gas	n.a.	cubic feet	\$1,484,142	n.a.	42	7%
Wood Chips	815	tons	\$36,690	\$45.02	1	0%
Wood Pellets	0	tons	\$0	\$0	0	0%
Geothermal	-	-	\$24,000	-	1	0%
Other	-	-	\$551,533	-	7	3%
Note: Data suggests not all SAUs reported natural gas price and quantity in cubic feet.						

C. Ventilation

1. What type of ventilation system do you have in this building? (Answer Yes to all that apply).

	Number	Percent
Operable windows	448	92%
Unit ventilators	268	55%
Fan forced ventilators	242	50%

Note: Totals more than 100% due to buildings with multiple ventilation systems.

D. Budgeting for heating fuel for FY 08/09

Fuel Type	Expected Quantity FY 08/09	Unit	Price per unit	Total Price (calc)	Number	Percent Cost
#2 Fuel Oil	7,622,286	gallons	\$3.39	\$25,803,637	423	88%
Kerosene	45,513	gallons	\$3.96	\$180,287	15	1%
LP	120,488	gallons	\$2.41	\$290,678	75	1%
Natural Gas	N/A	cubic feet	N/A	\$2,145,955	32	7%
Wood Chips	1,000	tons	\$44.75	\$44,750	1	0%
Wood Pellets	0	tons	--	\$0	0	0%
Geothermal	--	--	--	\$40,000	1	0%
Other	--	--	--	\$667,606	6	2%

Do you contract on an annual basis?				If Yes, Fixed Price or Variable Price		
Fuel Type	Yes	No	%Yes	Fixed	Variable	% Fixed
#2 Fuel Oil	272	16	94%	236	38	86%
Kerosene	4	2	67%	4	1	80%
LP	36	17	68%	31	10	76%
Natural Gas	17	19	65%	12	9	57%
Wood Chips	0	01	0%	0	0	--
Wood Pellets	0	00	0%	0	0	--
Geothermal	1	40	--	1	0	100%
Other	1	1	20%	1	1	50%

E. Budgeting for electricity

1. What was your annual cost for electricity for FY 07/08? \$17,671,361
2. If known, what was your kWh usage for FY 07/08? \$100,856,186
3. How much have you budgeted for electricity for FY 08/09?..... \$19,869,044
4. Do you contract on an annual basis for electricity?

Yes	No	%Yes
257	196	57%

F. Energy audits

1. Has an energy audit been performed for this building?

Yes	No	%Yes
173	287	38%

2. If so, did your energy audit include having your building thermally scanned?

Yes	No	%Yes
29	157	16%

School Administrative Units Returning a Survey	
School Administrative Unit	Count
APPLETON	1
AUBURN	1
AUGUSTA	1
BAR HARBOR	1
BEALS	1
BIDDEFORD	1
BOOTHBAY-BTHBAY HBR CSD	1
BRISTOL	1
BROOKLIN	1
BRUNSWICK	1
BUCKSPORT	1
CAPE ELIZABETH	1
CARIBOU	1
CHINA	1
DEER ISLE-STONINGTON CSD	1
DRESDEN	1
DURHAM	1
EASTON	1
FAYETTE	1
FIVE TOWN CSD	1
FLANDERS BAY CSD	1
FREEPORT	1
GEORGETOWN	1
GLENBURN	1
GLENWOOD PLT.	1
GORHAM	1
GREAT SALT BAY CSD	1
GREENVILLE	1
HARMONY	1
HERMON	1

HOPE	1
JONESPORT	1
LIMESTONE	1
LINCOLNVILLE	1
LISBON	1
Long Island	1
MANCHESTER	1
MARANACOOK CSD	1
Mid-Coast Sch of Tech-Region 8	1
MONMOUTH	1
MOOSABEC CSD	1
MT. DESERT	1
MT. DESERT REGION DISTRICT	1
MT. VERNON	1
NOBLEBORO	1
ORONO	1
PALERMO	1
PENINSULA CSD	1
PORTLAND	1
RAYMOND	1
READFIELD	1
SAD #1	1
SAD #10	1
SAD #15	1
SAD #16	1
SAD #17	1
SAD #19	1
SAD #20	1
SAD #22	1
SAD #23	1
SAD #28	1
SAD #29	1
SAD #30	1

SAD #31	1
SAD #33	1
SAD #34	1
SAD #35	1
SAD #36	1
SAD #37	1
SAD #38	1
SAD #4	1
SAD #40	1
SAD #41	1
SAD #42	1
SAD #44	1
SAD #45	1
SAD #46	1
SAD #47	1
SAD #48	1
SAD #49	1
SAD #5	1
SAD #52	1
SAD #54	1
SAD #56	1
SAD #59	1
SAD #60	1
SAD #61	1
SAD #67	1
SAD #68	1
SAD #7	1
SAD #70	1
SAD #72	1
SAD #74	1
SAD #75	1
SAD #8	1
SAD #9	1

SANFORD	1
SCARBOROUGH	1
SCHOODIC CSD	1
School of Applied Tech-Region 9	1
School Union 134	1
SEDGWICK	1
SO. AROOSTOOK CSD	1
SOMERVILLE PLT.	1
SOUTH BRISTOL	1
SOUTH PORTLAND	1
SOUTHWEST HARBOR	1
STEUBEN	1
TREMONT	1
VASSALBORO	1
WATERVILLE	1
WAYNE	1
WELLS-OGUNQUIT CSD	1
WESTBROOK	1
WINDSOR	1
WINSLOW	1
WINTHROP	1
YORK	1
Grand Total	118

Job Title Table	
Job title of person completing survey	Number of SAUs
0	1
Accountant	1
Administrative Assistant	6
Administrative Secretary	1
Bookkeeper	1
Bookkeeper Asst/Custodian	1
Bookkeeper Asst/Facilities Manager	1
Bookkeeper Asst/Head Custodian	3
Business Administrator	1
Business Manager	21
Business Manager/Maintenance Supervisor	1
BUSINESS SECRETARY	1
Director of Buildings and Grounds	2
Director of Facilities	3
Director of Facilities & Maintenance	1
Director of Finance and Operations	1
Director of Maintenance and Transportation	1
Director of Operations and Maintenance	2
Director of Transportation and Maintenance	1
Director Transportation, Facilities, Food Services	1
Director, Facilities & Projects	1
District Accountant	1
Executive Secretary	1
Facilities & Transportation Director	1
Facilities and Systems Administrator	1
Facilities Director	4
Facility Director	1
Finance Manager	6
Financial Manager	1
Fiscal Coordinator	4
Interim Superintendent	1

Interim Superintendent/Principal	1
Maintenance Director	1
Maintenance Supervisor	1
Maintenance/Transportation Supervisor	1
Operations	1
Operations Secretary	1
Operations Supervisor	1
Principal	5
Secretary	2
Secretary/Bookkeeper	2
Secretary/Dispatch	1
Special Projects Director	1
State Agent	1
Superintendent	14
Superintendent	1
Superintendent of Schools	3
Superintendent Secretary	1
Superintendent.Agent	1
Supervisor of Building Maintenance & Grounds	3
Supt. / Maint. Dir.	1
Supt. Secretary	1
TRANSPORTATION/CUSTODIAL SUPERVISOR	1
Grand Total	118

Number of Buildings by SAU	
School Administrative Unit	Number of Buildings
APPLETON	1
AUBURN	13
AUGUSTA	7
BAR HARBOR	1
BEALS	1
BIDDEFORD	6
BOOTHBAY-BTHBAY HBR CSD	1
BRISTOL	1
BROOKLIN	1
BRUNSWICK	9
BUCKSPORT	5
CAPE ELIZABETH	2
CARIBOU	8
CHINA	3
DEER ISLE-STONINGTON CSD	2
DRESDEN	1
DURHAM	1
EASTON	2
FAYETTE	1
FIVE TOWN CSD	1
FLANDERS BAY CSD	1
FREEPORT	5
GEORGETOWN	2
GLENBURN	2
GORHAM	5
GREAT SALT BAY CSD	1
GREENVILLE	3
HARMONY	1
HERMON	3
HOPE	1

JONESPORT	1
LIMESTONE	2
LINCOLNVILLE	2
LISBON	4
Long Island	1
MANCHESTER	1
MARANACOOK CSD	3
Mid-Coast Sch of Tech-Region 8	2
MONMOUTH	5
MOOSABEC CSD	1
MT. DESERT	1
MT. DESERT REGION DISTRICT	1
MT. VERNON	1
NOBLEBORO	1
ORONO	6
PALERMO	1
PENINSULA CSD	1
PORTLAND	20
RAYMOND	2
READFIELD	1
SAD #1	12
SAD #15	5
SAD #16	4
SAD #17	18
SAD #19	1
SAD #20	3
SAD #22	9
SAD #23	5
SAD #28	3
SAD #29	4
SAD #30	2
SAD #31	3
SAD #33	3

SAD #34	11
SAD #35	6
SAD #36	5
SAD #37	7
SAD #38	1
SAD #4	4
SAD #40	8
SAD #41	6
SAD #42	3
SAD #44	6
SAD #45	2
SAD #46	9
SAD #47	9
SAD #48	8
SAD #49	11
SAD #5	7
SAD #52	7
SAD #54	9
SAD #56	6
SAD #59	8
SAD #60	8
SAD #61	8
SAD #67	6
SAD #68	4
SAD #70	4
SAD #72	6
SAD #74	7
SAD #75	12
SAD #8	2
SAD #9	8
SANFORD	7
SCARBOROUGH	7
SCHOODIC CSD	1

School of Applied Tech-Region 9	1
School Union 134	3
SEDGWICK	1
SO. AROOSTOOK CSD	1
SOMERVILLE PLT.	1
SOUTH BRISTOL	1
SOUTH PORTLAND	10
SOUTHWEST HARBOR	1
STEUBEN	1
TREMONT	1
VASSALBORO	1
WATERVILLE	6
WAYNE	1
WELLS-OGUNQUIT CSD	3
WESTBROOK	8
WINDSOR	1
WINSLOW	3
WINTHROP	3
YORK	5
Grand Total	485

Gradespan Table		
Lowest Grade	Highest Grade	Number of Schools
1	3	3
	4	1
	5	3
	6	1
2	3	1
	4	1
	5	4
	6	1
3	4	1
	5	9
	6	1
4	5	5
	6	5
	8	2
5	6	2
	8	14
6	8	29
	12	5
7	8	10
	9	1
	12	6
8	12	1
9	11	1
	12	74
K	1	2
	2	15
	3	7
	4	10
	5	45
	6	24
	8	33
	12	3
preK	1	2
	2	5

	3	7
	4	9
	5	19
	6	14
	8	8
	12	5
	K	2
	preK	2
Grand Total		393

Other Buildings	
Type Specified	Number of Buildings
2 Buildings share electricity, heat	1
Adult & Special Ed	1
Adult Ed	1
Adult Ed.	1
ADULT EDUCATION	3
Adult Education & Regional Special Ed Program on site	1
Auditorium / classrooms	1
Autistic Program	2
BAND	1
bus garage runs on same boilers	1
BUS OFFICE - MINOR REP	1
Casco Bay High School	1
Central Supplies Storeroom	1
Concession/Ath. Storage/Grounds	1
discontinued school	1
District Warehouse	1
ELPM - Adult Ed	1
Food Service/former warehouse	1
Ged, Enrichment, and other programs	1
Gifted/Talented and Elem Foreign Language Teachers	1
Holds 9th graders and classes	1
K-12 Day Treatment/PAE	1
Leased space	1
Maintenance	1
Maintenance Shop	4
Maintenance; School Lunch	1
Multilingual Office and Adult Ed	1
Region 8 Satellite program	1
Science	1
see #1 above	1

Sp Ed Regional Progs & Ad Ed	1
special Education students	1
Storage Barn	1
Storage Building	1
Storage/office	1
Teen Day Care	1
Title I Office	1
Grand Total	43

Construction Date	
Year of Construction	Number of Buildings
2008	2
2007	1
2006	4
2005	5
2004	6
2003	7
2002	11
2001	6
2000	5
1999	4
1998	4
1997	5
1996	5
1995	3
1994	2
1993	4
1992	9
1991	8
1990	10
1989	8
1988	7
1987	6
1986	7
1985	3
1984	1
1982	5
1981	4
1980	7
1979	4
1978	1

1977	3
1976	8
1975	6
1974	6
1973	6
1972	8
1971	4
1970	7
1969	8
1968	13
1967	10
1966	4
1965	5
1964	7
1963	13
1962	13
1961	5
1960	11
1959	6
1958	4
1957	3
1956	10
1955	11
1954	6
1953	14
1952	13
1951	9
1950	23
1949	3
1948	6
1946	1
1945	1
1940	7

1939	1
1938	2
1937	1
1935	2
1934	1
1932	2
1930	5
1929	1
1928	2
1927	1
1926	2
1925	3
1924	4
1923	1
1922	1
1920	1
1919	1
1917	1
1916	1
1914	1
1907	1
1905	3
1904	1
1903	1
1901	1
1900	2
1897	1
1895	2
1894	1
1893	1
1889	1
1884	1
1883	1

1869	1
1867	1
1853	2
1845	1
1843	1
1825	1
Grand Total	466

Additions and Renovations	
Most Recent Year	Number of Buildings
2008	22
2007	18
2006	5
2005	13
2004	11
2003	5
2002	16
2001	17
2000	21
1999	4
1998	7
1997	6
1996	6
1995	4
1994	2
1993	7
1992	8
1991	7
1990	12
1989	7
1988	11
1987	3
1986	2
1985	4
1984	2
1983	3
1982	5
1981	2
1980	5
1978	4
1977	1

1976	2
1975	2
1974	1
1973	2
1972	2
1971	1
1969	1
1967	2
1966	3
1962	4
1960	1
1958	1
1957	1
1956	1
1955	1
1953	1
1950	1
1948	1
1944	1
1940	1
1937	1
1930	1
1915	1
1886	1
Grand Total	274

Additions and Renovations	
Most Recent Year	Number of Buildings
2008	22
2007	18
2006	5
2005	13
2004	11
2003	5
2002	16
2001	17
2000	21
1999	4
1998	7
1997	6
1996	6
1995	4
1994	2
1993	7
1992	8
1991	7
1990	12
1989	7
1988	11
1987	3
1986	2
1985	4
1984	2
1983	3
1982	5
1981	2
1980	5
1978	4
1977	1

1976	2
1975	2
1974	1
1973	2
1972	2
1971	1
1969	1
1967	2
1966	3
1962	4
1960	1
1958	1
1957	1
1956	1
1955	1
1953	1
1950	1
1948	1
1944	1
1940	1
1937	1
1930	1
1915	1
1886	1
Grand Total	274

Floors in Building	
Floors in Building	Number of Buildings
1	239
2	182
3	52
4	5
5	1
Grand Total	479

Other Heating Distribution Systems	
Type Specified	Number of Buildings
Coal	1
diffused air system	1
K-1 heater backup	1
Nat.Gas Fan Heater	1
NO HEAT	1
None. Small office and restroom heated	1
Propane boiler - hot water base	1
Propane in Modulers	1
Radiant	4
radiant floor	2
Radiant Heat	2
Rinni Propane Heaters	1
Univents	2
Waste Oil Burner	2
Waste Oil Furnace	1
Water Source Heat Pump	1
Grand Total	23